



Guided Inquiry-Based Dermatoglyphic Practicum Feasibility Test

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ABSTRACT

One of the lessons contained in the genetics practicum is dermatoglyphics. During the genetic practicum on dermatoglyphic material, students experienced few difficulties in explaining the material. Therefore, a genetic practicum guide for dermatoglyphic material was developed. This study aims to produce an appropriate guided inquiry-based practicum guide from the aspect of the feasibility of the material and media. The results of this study are expected to provide new innovations as a source of learning for students. The development of the practical guide is carried out using the ADDIE model. This study reviews the development stage at the ADDIE stage. The data analysis carried out was descriptive qualitative and descriptive quantitative. Qualitative data came from the validator's suggestion while quantitative data was obtained from a Likert questionnaire on a scale of 1-5. The research instrument is a material expert validation sheet and media expert. Based on the research, the average results of stage 1 material validation were 56.63% with a fairly good category and stage 2 validation was 71.60%. While the results of the media validation stage 1 obtained 34.78% with a fairly good category, validation stage 2 66.19% good category, and validation stage 3 has a very good category with a percentage of 89.05%. The material and media validation process is carried out in stages and improvements are made so that it can be concluded that this practical guide is feasible.

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INTRODUCTION

Practicum Guidelines are practicum guidelines that contain titles, objectives, theoretical foundations, tools and materials, and questions after the rules of scientific writing to achieve learning objectives (Arifah *et al.*,

2014). According to Lauren *et al.*, (2016) Practicum Guide is a guide to carrying out learning activities. Practicum guidelines are made so that the implementation of practicum can run well.

The practicum guide is arranged as a reference for the implementation of practicum

to run effectively, efficiently so as to obtain the desired results (Yulia, 2015). Practicum guidelines can help manage knowledge and develop process skills (Irimi *et al.*, 2017; Lauren *et al.*, 2016; Zulaiha & Ibrahim, 2014).

Learning experiences can be obtained through practicum. Dermatoglyphi is a genetic material that can be practiced. Dermatoglyphi is a picture of *rigi-rigi* (*Crista cutanea*) on the surface of the skin located on the fingers, palms and soles of the feet (Purbasari & Sumadji, 2017; Singh *et al.*, 2016; Smail *et al.*, 2019).

Dermatoglyphi is an important material studied related to the uniqueness and diversity of humans. Dermatoglyphian Material Practicum Student Constraints are guidelines that have not been found, not many fingerprint patterns are available, and fingerprint patterns are not explained, generally the basic pattern is whorl, arch, and loop, and their derivative patterns are not explained. Also the procedure for taking fingerprints is not yet detailed explained, causing obstacles in determining the fingerprint pattern.

Dermatoglyphi practicum will be easier for students to understand when using guided inquiry-based guidelines. Students become more active in carrying out practicum independently at home with guided inquiry -based practicum guidelines (Fadillah & Angraini, 2018; Syamsu, 2017). In addition, guided inquiry -based practicum guidelines make students active to find material concepts (Nasution, 2018).

Validation is the development stage of the Addie model. The practicum guide developed needs to be validated by experts according to their fields. Validation consists of validation of material experts and media experts (Sugiyono, 2018).

Research aims to determine the feasibility of guided inquiry -based dermatoglyphi guidelines developed based on aspects of

material feasibility and media. Guided Inquiry -Based Dermatoglyphian Practicum Guide to Providing Innovation of Learning Resources, Able to Increase Knowledge of Research on Dermatoglyphi. Dermatoglyphi is not only useful in forensic identification but also in the diagnosis of some genetic disorders, which is why studying the pattern of dermatoglyphi is important. Students can have life skill competencies in the form of how to make dermatoglyphi patterns and analyze practically.

METHODS

The research method used is development and development. The development model used is Addie. Addie is an abbreviation that shows the stages of development consisting of analysis (analysis), design (design), development (development), implementation (implementation), and evaluation (evaluation) (Evaluation) (Molenda, 2015).

Feasibility Test Practicum Guide is the process of the development stage. The development stage is the product revision process made at the design stage. The revision was made based on suggestions obtained from the validator of material and media. The research instrument used was a questionnaire for material experts and media experts.

The data used is qualitative data and quantitative data. Qualitative data consists of suggestions, criticisms, and comments from material validators and media. Quantitative data obtained from the validation questionnaire using a 1-5 scale Likert scale. The categories of the Likert scale are: 5 (very feasible, without revision), 4 (feasible, with revision), 3 (quite feasible, need to be revised), 2 (not feasible, need to be revised), and 1 (very inappropriate, necessary) (Sugiyono, 2018).

Table 1. Media feasibility criteria

No	Percentage Score (%)	Category
1	80 – 100	Very feasible, without revision
2	60 – 80	Worthy, without revision
3	40 – 60	Quite decent, with revisions
4	20 – 40	Not feasible, need revision
5	0 – 20	Very inappropriate, need to revise

(Riduwan & Akdon, 2020)

RESULTS AND DISCUSSION

Practical Guide to Guided Inquiry-Based Dermatoglyphic Materials

The dermatoglyphic practicum guide that has been developed consists of an introduction, body, and closing section. The introduction contains the front cover, foreword, table of contents, list of pictures, and the rules for implementing the practicum. In the content section there are practicum objectives, dermatoglyphic material which is equipped with the columns “Keywords”, “Let’s Think”, “Find the facts!”, and “at a glance info”. The content section also contains tools and materials, work procedures, results tables, post practicum questions (evaluation), and additional information. The closing section consists of references, developer identity, and back cover.

The practicum guide that was developed based on guided inquiry because it has components “Let’s think” and “Find the facts!” whose purpose is to formulate problems and invite students to think about temporary answers) of the problems provided. After students find answers, the teaching assistant will help direct the right answers.

The guided inquiry-based practicum guide has five steps, namely making questions (problems), formulating tentative assumptions, collecting data information, analyzing data information and making conclusions (Maisarah *et al.*, 2015; Uzlifat *et al.*, 2018). The guided inquiry stage helps students to be more

independent in finding a material concept (Widiana, *et al.*, 2019).

The guided inquiry-based dermatoglyphic material practicum guide is composed of several important components. The components in the practicum guide must contain the title of the practicum, practicum objectives, theoretical basis, tools and materials, working methods, and evaluation (Budiarti & Oka, 2014; Prayitno, 2017). The practicum guide also has an explanation of the report writing format to help students complete reports that must be done after the practicum (Anggraini, 2016).

After the practical guide is designed, material and media validation is carried out by expert validators. Product validation is carried out so that the product is feasible and can proceed to the trial stage. Ideally, a learning product that is being developed needs to be re-examined by experts related to teaching materials, the accuracy of learning objectives, the design of learning media and so on (Aminah, 2015). This statement is in accordance with the research of Suparman, Badjuri, & Anwar (2018) that learning devices should have a “valid/appropriate” status before being used for learning. The developed practicum guide can be declared qualified if it has met the criteria by providing a draft practicum guide and a questionnaire to 2 material expert lecturers and a design expert (media) and has been declared valid by the lecturer (Samsu *et al.*, 2020).

Feasibility Assessment of Practicum Guides by Expert Material Validators

The first validation stage is material validation. Assessment for material validation is given to the appropriateness of the content, the feasibility of presentation and the feasibility of language. Material validation was carried out twice. The results of the first stage of the

validation are an average of 56.63%, which is a fairly decent category with revisions. The material validator suggests immediate revision to proceed to stage II validation. The results of the second stage of validation increased, which was 71.60% with a feasible category, as can be seen in Table 2.

Table 2. Feasibility Assessment of Practical Guide Materials

No	Validation number	Material Feasibility Aspect			Overall Average (%)	Criteria
		Content Eligibility (%)	Presentation Eligibility (%)	Language Eligibility (%)		
1.	Phase I Validation	54.3	63.6	52	56.63	Decent enough
2.	Phase II Validation	68.6	78.18	68	71.60	Decent

Assessment of material validation is divided into the feasibility of content, presentation and language. The feasibility aspect of the content of stage I is 54.3% and an increase in stage II is 68.6%. The content feasibility assessment indicators consist of the scope of the material, the accuracy of the material, and its suitability with the development of science and technology (Kartikasari & Widodo, 2015). Material expert validators provide suggestions to increase the scope of material whether fingerprint pattern variations can appear on certain fingers.

The next aspect of the assessment is the feasibility of the presentation. The results of the validation of the feasibility of the presentation in stage I were 63.6%, and an increase in the validation stage II was 78.18%. The indicators for assessing the presentation feasibility aspect consist of presentation support, presentation techniques and presentation completeness.

Material presentation techniques explain the consistency and variety of presentation. Supporters of the presentation show the availability of motivational generators that can make students participate in learning activities. The completeness of the presentation shows the

introduction, content, and closing content of the product being developed (Rismawati *et al.*, 2015). The aspect of presentation feasibility is in accordance with these indicators. However, the material expert validator provides suggestions for improving the terms used to be consistent with the images in the practicum guide.

Aspects of the feasibility of language obtained the results of the first stage of 52% and increased in the second stage of validation by 68%. The aspect of language feasibility can be viewed from several indicators, namely communicativeness and conformity with language rules. Communicative can be judged from the language used in presenting the material that is easy to understand. The aspect of conformity to language rules is assessed from the accuracy of grammar to make effective sentences according to good and correct Indonesian (Purnanto & Mustadi, 2018; Sari *et al.*, 2018). Suggestions from the validator for the aspect of language feasibility is to improve the grammar of sentences that are less effective. Data on the feasibility assessment of the material in terms of aspects can be observed in Figure 1.

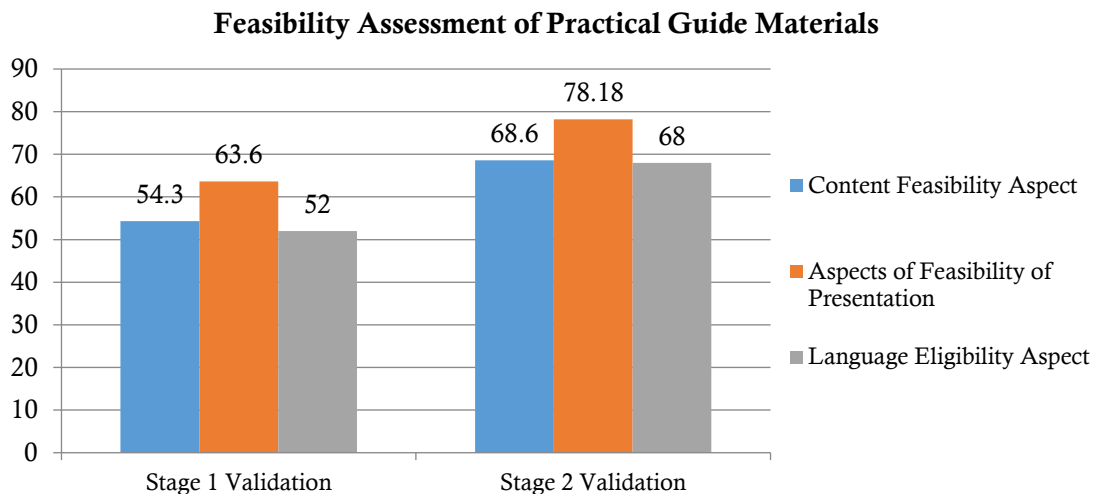


Figure 1. Feasibility Assessment of Practical Guide Materials

Practicum Guide Feasibility Assessment By Media Expert Validators

Media validation was carried out three times. The results of media validation experienced an increase in the initial validation stage I with a percentage of 34.78%, the

category was quite feasible to 66.19%, the category was feasible in the validation stage II, and in the validation stage 3 it had a very feasible category with a percentage of 89.05%. The results of this percentage can be observed in Table 3.

Table 3. Feasibility Assessment of Practicum Guide Media

No	Validation Number	Graphic Aspect		Overall Average (%)	Criteria
		Cover Design Guide (%)	Guide Content Design (%)		
1.	Validation Phase I	26.67	42.88	34.78	Decent enough
2.	Validation Phase I	65.67	65.71	66.19	Decent
3.	Validation Phase I	86.67	91.43	89.05	Highly Decent

Based on Table 3, it is known that there was an increase in the results of stage I validation to stage III validation. The results of the validation on the graphic aspect of the cover design stage I to stage III there was an increase in the percentage from 26.67% to 86.67%. The cover design assessment is carried out based on the suitability of the background color with text color, font size, and cover illustrations.

The evaluation of design aspect validation on the contents of the practicum guide showed an increase from stage I to stage III validation, from 42.88% to 89.95%. The assessment indicators are made based on the consistency of the layout of the practicum guide titles and subtitles, illustrations, and the typography of the practicum guide letters. The percentage of media feasibility assessment can be seen in Figure 2.

Assessment of Practicum Guide Media Feasibility

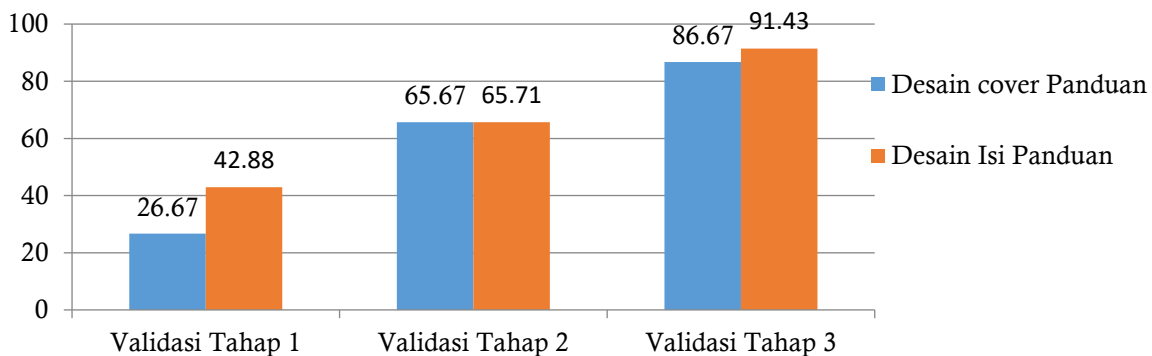


Figure 2. Feasibility Assessment of Practicum Guide Media

The validation of the practicum guide media is carried out by evaluating the graphic aspect based on the cover design and the content design of the practicum guide. The media validator's suggestions for the practicum guide are to improve the color to make it more attractive, add images related to fingerprint patterns, clarify the image, and improve the appearance of the practicum guide design to make it more attractive.

Relevant research by Safitri & Hartati (2016) found that the validation results for cell biology textbooks in the media aspect were 77.34% in the good predicate category and 83.33% in the language aspect with the good predicate category so that they were suitable for use. Media validation which includes graphic elements consisting of the consistency of the typeface, the quality of the illustration images and their descriptions (Safitri & Hartati, 2016). Adequate graphic elements in the practical guide can motivate students to study the material provided. This is in line with the opinion of Adalikwu & Iorkpilgh (2013) which states that a good practicum guide can be a liaison between educators and students to develop learning motivation.

After the dermatoglyphic practicum guide was declared feasible, the implementation and evaluation stages were carried out. The implementation phase includes the application of practicum guides to students to determine the improvement of their understanding. The evaluation stage is a guiding process based on the results of implementation and student suggestions. The practicum guide that has been developed will then be used and distributed to students who are taking genetic practicum courses, in order to increase students' understanding when writing a final research project on dermatoglyphics.

CONCLUSION

The results showed that the feasibility test of guided inquiry -based dermatoglyphic practicum guidelines can be categorized as suitable for increasing student knowledge. Material validation can be declared feasible, without revision after two stages of validation. While media validation is declared very feasible, without revision with three times the stage of validation.

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